**Task:** With five-point stencil finite difference method, write a C or C++ program that solves the Poisson equation below:

with Dirichlet boundary condition on a square domain [-1,1]x[-1,1]. The system of linear equations obtained as a result of the five-point stencil method should be solved using the Jacobi method. Solve the equation above using different numbers of total discretization points N in each direction. Calculate f(x,y) based on the exact solution: u(x,y) = sin(pi\*x)cos(pi\*y).

1. In a loglog style, plot the error convergence trend: i.e. error vs N.
2. Estimate the computational walltime corresponding to each N that you have chosen.

**Instruction**: A common practice is to start with a value of N, and then double it at each subsequent stage. We usually go for 4-5 such stages.